In the Specification

The Examiner objected to the specification because of informalities. Applicants have amended the specification to correct the informalities. Applicants respectfully request the Examiner withdraw the objections. No new matter has been added.

Objection of Claims

The Examiner objected to Claim 1 because of informalities. Applicants have inserted the term "respectively" in front of the phrase "positioned" and inserted the term "corresponding" in front of the term "waveguides" to correct the informalities.

Also, the Examiner objected to Claim 4 because of informalities. Applicants have replaced the phrase "wherein short caps are coupled to the circuit substrate as reflective faces for the electroconductive patterns" with the phrase "the electroconductive patterns are disposed between the corresponding bending portions and corresponding short caps, which serve as reflective faces, coupled to the circuit substrate" to correct the informalities.

Applicants respectfully request the Examiner withdraw the objections. No new matter has been added.

Rejection of Claims

35 U.S.C. § 112

Examiner has rejected Claim 3 under 35 U.S.C. § 112, 2nd paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner stated, "In claim 3, it is unclear whether both of 'the two pin members have an L shape' is a proper characterization. Moreover, it is unclear whether 'a ground pattern overlying the circuit substrate' is a proper characterization. . ."

Applicants submit that the two pin members having an L shape and a ground pattern overlying the circuit substrate are proper characterizations. The specification states that the two pin members have an L shape and the ground pattern is provided on the surface of the circuit substrate. In particular, the specification states, " This embodiment differs from the second embodiment described above in that L-shaped pin

members are supported by the circuit substrate 4 as first and second probes 11 and 12 and that a ground pattern 13 provided on the surface of the circuit substrate 4 is used as the reflective face for the two probes." (Specification, page 8, lines 20-25.) Applicants respectfully request the Examiner to withdraw this rejection.

35 U.S.C. § 102

In the Office Action, the Examiner rejected Claims 2-4 under 35 U.S.C. §102(e) as being anticipated by Yoshida et al. (U.S. Patent No. 6,426,729). Applicants have amended Claim 1 and submit that Claim 1 is patentable over the reference cited by the Examiner. Applicants respectfully traverse this rejection.

Amended Claim 1 recites, "two probes disposed on the circuit substrate, wherein the two probes face orthogonal to each other are respectively positioned within the corresponding waveguides, wherein the first and second linear polarized waves produce signals that can be simply amplified and synthesized by the two probes while on the circuit substrate."

Thus, the structure in Claim 1 provides two probes disposed on the circuit substrate that simply amplifies and synthesizes signals from the first and second linear polarized signals to significantly reduce signal losses, interference and simplifies the structure of the waveguides. (Specification, page 7, lines 7-15).

Yoshida et al. discloses a conductive-transmission-line waveguide converter that has two probes, wherein one of the two probes is used for taking in a horizontally polarized wave and the other probe is used for taking in a vertically polarized wave. (Column 3, lines 15-23). However, Yoshida et al. does not anticipate, disclose or suggest that the two probes can simply amplify and synthesize signals from the first and second linear polarized waves while on the circuit substrate. In particular, Yoshida et al. suggests that the horizontal and vertical wave components sent through the conductive-transmission-line waveguide structure are amplified by FET amplifiers 41-44 before being supplied through microstrip lines 45-48 to a converter circuit 28. These FET amplifiers 41-44 are being turned on and off by their respective control signals to select only desired polarized wave components. In contrast to the present invention, which simply amplifies all types of wave components to produce all types of signals, Yoshida's

FET amplifiers do not simply amplify all signals from the polarized waves because they are being turned on and off to receive only desired wave components to produce desired signals.

For the foregoing reasons, Claim 1 as amended is not anticipated by Yoshida et al. Claims 2 and 4 depend from independent Claim 1. Therefore, Claims 2 and 4 are also not anticipated by Yoshida as claims dependent upon an allowable base claim. Applicants request the Examiner to withdraw the rejections of Claims 2 and 4 as amended.

Conclusion

Pending Claims 1-4 as amended are patentable. Therefore, in view of the above amendments, Applicants respectfully submit that this application is in condition for allowance and such action is earnestly requested. If for any reason, however, the Examiner feels that a telephone interview would be helpful in resolving any remaining issues the Examiner is respectfully requested to contact Applicants' undersigned attorney.

Respectfully submitted,

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APPENDIX A
Serial No. 10/038,227
CONVERTER FOR SATELLITE COMMUNICATION RECEPTION SIMPLIFIED IN STRUCTURE

In the Specification:

Please replace page 1, lines 17-26 and page 2, lines 1-2 with the following paragraph as follows:

"However, where the frequency range of input signals is as high as 20 GHz for instance, the problem of interference between the vertically polarized wave and the horizontally polarized wave becomes significant in the constitution described above. Therefore, where linear polarized waves of an extremely high frequency range are to be received, the inside of the waveguide is branched into two paths, one for the vertically polarized wave and the other for the horizontally polarized wave, and polarized signals detected by probes are prevented from interfering with each other by coupling the vertically polarized wave and the horizontally polarized wave to the probes in their respective propagation paths."

Please replace page 2, lines 3-27 and page 3, lines 1-2 with the following paragraph as follows:

" However, where the vertically polarized wave and the horizontally polarized wave are to be coupled to probes in two separate propagation paths as according to the prior art described above, usually each one of the two probes is fitted to a separate circuit substrate, one circuit substrate being provided with a signal synthesizing means, and signals are transmitted from the other circuit substrate to the circuit substrate provided with the synthesizing means via a connecting section, because the electric field directions of the vertically polarized wave component and the horizontally polarized wave component are orthogonal to each other in the propagation paths. However, synthesis of signals detected by two probes using two circuit substrates not only makes the pattern and structure more complex but also involves the problems of increased signal losses and it is

impossibl[ity]e to reduce the interference sufficiently and, moreover, complicates the circuit substrate's [fitting] ability to work on account of the high frequency of the polarized signals.

There is also proposed an alternative according to which both probes are fitted to the same circuit substrate and an adapter is provided in between this circuit substrate and the waveguide, which aligns the electric field directions of the vertically polarized wave component and the horizontally polarized wave component into the same direction, but such an adapter would complicate the structure and accordingly [would prove to be a cost boosting factor] this adapter would boost the cost of the structure."

Please replace page 3, lines 3-8 with the following paragraph as follows:

"[An object of the present invention, attempted in] In view of the[se] problems involved in the prior art, [is to] the present invention provides a simply structured converter for satellite communication reception which can contribute to reducing signal losses and simplifying the assembly work."

Please replace page 4, lines 18-19 with the following paragraph as follows:

"Fig. 2 shows a plan view of the essential part of a case provided in the converter for satellite communication reception.

Please replace page 4, line 20 with the following paragraph as follows:

"Fig. 3 shows a section view along line 3-3 in Fig. 2."

Please replace page 4, lines 21-22 with the following paragraph as follows:

"Fig. 4 shows a plain view of the essential part of a case provided in a second preferred embodiment of the invention."

Please replace page 4, line 23 with the following paragraph as follows:

"Fig. 5 shows a section view along line 5-5 in Fig. 4."

Please replace page 4, line 24 with the following paragraph as follows:

"Fig. 6 shows a section view along line 6-6 in Fig. 4."

Please replace page 4, lines 25-26 with the following paragraph as follows:

"Fig. 7 shows a plan view of the essential part of a case provided in a third preferred embodiment of the invention."

Please replace page 5, line 1 with the following paragraph as follows:

"Fig. 8 shows a section view along line 8-8 in Fig. 7."

Please replace page 5, line 2 with the following paragraph as follows:

"Fig. 9 shows a section view along line 9-9 in Fig. 7."

Please replace page 5, lines 3-4 with the following paragraph as follows:

"Fig. 10 shows a section view of the essential part of a case provided in a fourth preferred embodiment of the invention."

Please replace page 5, lines 6-13 with the following paragraph as follows:

"Preferred embodiments of the present invention will be described below with references to accompanying drawings. Fig. 1 shows the overall configuration of a converter for satellite communication reception, which is the first preferred embodiment of the invention; Fig. 2, a plan view of the essential part of a case provided in the converter for satellite communication reception, and Fig. 3, a section view along line 3-3 in Fig. 2."

Please replace page 5, lines 14-25 with the following paragraph as follows:

"As illustrated in Fig. 1, the converter for satellite communication reception embodying the invention in this mode is provided with a wave guide 1 whose inside is branched into two propagation paths 1a and 1b and a case 2 consisting of an electroconductive metallic material. Orthogonal bipolarized signals transmitted from a satellite are entered into the inside of the waveguide1 through a horn 1c. [Inside the wave guide 1 is arranged a short-circuit rod 3 and out of the orthogonal bipolarized signals entered into the waveguide 1, the horizontally polarized wave, for instance, is reflected by the short-circuit rod 3 to proceed in the first propagation path 1a, while the

vertically polarized wave passes the short-circuit rod 3 to proceed in the second propagation path 1b.] The waveguide 1 includes a short-circuit rod 3, which receives the orthogonal bipolarized signals. When the short-circuit rod 3 receives these orthogonal bipolarized signals, a horizontally polarized wave in the orthogonal bipolarized signals, for instance, is reflected by the short-circuit rod 3 to proceed in the first propagation path 1a. In another instance, a vertically polarized wave in the orthogonal bipolarized signals passes the short-circuit rod 3 to proceed in the second propagation path 1b."

Please replace page 10, lines 14-25 with the following paragraph as follows:

"Fig. 10 shows a section view of the essential part of a case provided in a fourth preferred embodiment of the invention. This embodiment differs from the third embodiment described above in that both waveguides 2a and 2b are straight and that the circuit substrate 4 is arranged in an orthogonal direction to the axial centers of the waveguides 2a and 2b. Thus the tip of the first probe 11 consisting of an L-shaped pin member extends into inside the first waveguide 2a, while that of the second probe 12 also consisting of an L-shaped pin member extends into inside the second waveguide 2b, and the ground pattern is provided on the surface of the circuit substrate 4."

In the Claims

Please rewrite Claims 1 and 4 as follows:

1. (Twice Amended) A converter for satellite communication reception, comprising:

a horn configured to receive first and second linear polarized waves orthogonal to each other;

a case having two waveguides configured to [receive] branch the first and second linear polarized waves [orthogonal to each other propagate,], respectively, and to propagate the corresponding first and second linear polarized waves;

a circuit substrate fitted to the case and disposed whose plane is in parallel with

a direction in which the first and second linear polarized waves propagate; and

two probes disposed on the circuit substrate, wherein the two probes [are positioned within the waveguides] face orthogonal to each other are respectively positioned within the corresponding waveguides, wherein the first and second linear polarized waves produce signals that can be simply amplified and synthesized by the two probes while on the circuit substrate.

4. (Twice Amended) The converter for satellite communication reception according to Claim 1, wherein:

each of the two waveguides comprises a bending portion at which the corresponding linear polarized wave bends perpendicularly and propagates;

the two probes comprise electroconductive patterns overlying the circuit substrate;[,] and

[wherein the short caps are coupled to the circuit substrate as reflective faces for] the electroconductive patterns are disposed between the corresponding bending portions and corresponding short caps, which serve as reflective faces, coupled to the circuit substrate.